*भारतीय मानक*
***Indian Standard***

**IS 2785 : 2022**

# चीज़ — विशिष्टि

*( दूसरा पुनरीक्षण )*

# Cheese — Specification

*( Second Revision )*

ICS 67.100.30

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Dairy Products and Equipment Sectional Committee, FAD 19

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Dairy Products and Equipment Sectional Committee had been approved by the Food and Agriculture Division Council.

Cheese making is one of the important methods adopted for conserving surplus of milk. Cheese provides fat and protein concentrate in a highly nutritious and palatable form. The cheese most popular in India may be grouped into two varieties, namely, hard (cheddar, edam, gouda, etc) and soft (for example, cottage cheese). Low moisture content and long keeping quality are the characteristics of the hard varieties which are also used for the manufacture of processed cheese. Soft cheese contains high percentage of moisture and are meant to be consumed within a short interval after their manufacture.

This standard has been prepared with a view to providing an optimum quality in natural and processed cheeses. It covers hard as well as soft varieties of cheese along with processed cheese and processed cheese spread.

It is not possible to produce high grade cheese from raw materials which are initially of poor hygienic quality irrespective of the subsequent method of treatment or handling. It is, therefore, important to exercise the utmost care in obtaining milk and other ingredients of good hygienic quality to ensure that the product is really good.

This standard was originally published in 1964 and subsequently revised in 1979 to incorporate an additional type of cheese, namely, soft cheese, besides updating the various definitions and provisions in the standard. This second revision has been brought out to harmonize the standard with the *Food Safety and Standards (Food Products Standards and Food Additives) Regulations*, 2011, and the major changes include:

a) Different types of cheese varieties specified under the FSSAI Regulations have been included and aligned with the *Food Safety and Standards (Food Products Standards and Food Additives) Regulations*, 2011; and
b) Quality and microbiological requirements of the product have been aligned with the *Food Safety and Standards (Food Products Standards and Food Additives) Regulations*, 2011.

In the formulation of this standard, due consideration has been given to the provisions of the *Food Safety and Standards Act*, 2006 and the *Rules* and *Regulations* framed thereunder and the *Legal Metrology (Packaged Commodities) Rules*, 2011. However, this standard is subject to the restrictions imposed under these, wherever applicable.

The composition of the Committee responsible for formulation of the standard is given in Annex D.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*

# CHEESE — SPECIFICATION

*( Second Revision )*

## 1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for hard variety cheese, processed cheese, processed cheese spread and soft cheese.

## 2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

## 3 TERMINOLOGY

### 3.0 Cheese

Cheese is the ripened or unripened soft, semi-hard, hard, or extra-hard product, which may be coated with food grade waxes or polyfilm, and in which the whey protein/ casein ratio does not exceed that of milk. Cheese is obtained by:

a) Coagulating wholly or partly the protein of milk, skimmed milk, partly skimmed milk, cream, whey cream or buttermilk, or any combination of these materials, through the action of suitable enzymes of non-animal origin or other suitable coagulating agents, with or without use of harmless lactic acid bacteria and flavour producing bacteria, and by partially draining the whey resulting from the coagulation, while respecting the principle that cheese-making results in a concentration of milk protein (in particular, the casein portion), and that consequently the protein content of the cheese will be distinctly higher than the protein level of the blend of the above milk components from which cheese was made;

b) Processing techniques involving coagulation of the protein of milk or products obtained from milk, or both, which give an end-product with similar physical, chemical and organoleptic characteristics as the product specified in (a) above.

All cheese shall be made from milk which is subject to heat treatment at least equivalent to that of pasteurization.

NOTE — In case of cheeses made from whey or utilizing whey solids, the requirement of whey protein/ casein ratio indicated in 3.0 may not be applicable.

### 3.1 Unripened Cheese

Unripened cheese, including fresh cheese, is ready for consumption soon after manufacture, such as cottage cheese (a soft, unripened, coagulated curd cheese), creamed cottage cheese (cottage cheese covered with a creaming mixture), cream cheese (rahmfrischkase, an unripened soft spreadable cheese) mozzarella and scamorza cheeses and paneer (milk protein coagulated by the addition of citric acid from lemon or lime juice or of lactic acid from whey, that is strained into a solid mass, and is used in vegetarian versions of, e.g. hamburgers). Includes the whole unripened cheese and unripened cheese rind (for those unripened cheeses with a "skin" such as mozzarella). Most products are plain, however, some such as cottage cheese and cream cheese, may be flavoured or contain ingredients such as fruit, vegetables or meat. Excludes ripened cream cheese, where cream is a qualifier for a high fat content.

### 3.2 Ripened Cheese

Ripened cheese is not ready for consumption soon after manufacture, but is held under such time and temperature conditions so as to allow the necessary biochemical and physical changes that characterize the specific cheese. For mold-ripened cheese, the ripening is accomplished primarily by the development of characteristic mold growth throughout the interior and/or on the surface of the cheese. Ripened cheese may be soft (e.g. camembert), firm (e.g. edam, gouda), hard (e.g. cheddar), or extra-hard and includes cheese in brine, which is a ripened semi-hard to soft cheese, white to yellowish in colour with a compact texture, and without actual rind that has been preserved in brine until presented to the consumer.

### 3.3 Hard Variety Cheese

Cheese made from milk and other ingredients according to the general procedure prescribed in **5.1.2** and containing ingredients as specified in Table l. Cheese under this category can be further classified under subcategories namely hard pressed;

semi hard; extra hard; and extra hard grating cheese based on moisture content and texture characteristic.

**3.3 Soft Cheese**

The product prepared by coagulating whole or skimmed or partly skimmed or recombined or reconstituted milk of dairy animals or their mixture with or without the addition of rennet or with organic acids such as lactic and citric (artificially acidulated or naturally developed by use of selective species of bacteria), heat and salt. Skim milk cheese may be dressed with homogenized pasteurized cream. Cheese under this category can be further classified under subcategories named soft and semi soft cheese based on moisture content and texture characteristic.

**3.4 Individual or Named Variety Cheese**

Cheeses which are known by traditionally given names with certain characterised method of preparation, texture, taste, flavour, colour, appearance and ripening.

**3.4.1** *Cheddar Cheese*

Ripened hard cheese obtained by coagulating heated or pasteurized milk with cultures of harmless lactic acid producing bacteria, suitable enzymes of non-animal origin or other suitable coagulating enzymes. It shall be in the form of hard pressed block and it may have a coating of food grade waxes or wrapping of cloth or polyfilm. It shall have firm, smooth and waxy texture with a pale straw to orange colour without any gas holes.

**3.4.2** *Danbo Cheese*

Ripened semi hard cheese obtained by coagulating heated or pasteurized milk with cultures of harmless lactic acid producing bacteria, suitable enzymes of non-animal origin or other suitable coagulating enzymes. It shall be smooth in appearance with firm texture and uniform yellow colour and may be coated with food grade waxes or wrapping of cloth or polyfilm.

**3.4.3** *Edam Cheese*

The ripened semi hard cheese obtained by coagulating heated or pasteurized milk with cultures of harmless lactic acid producing bacteria, suitable enzymes of non-animal origin or other suitable coagulating enzymes. It shall have a firm texture suitable for cutting with a yellowish colour and may have a hard rind which may be coated with food grade waxes, wrapping of cloth, polyfilm or vegetable oil.

**3.4.4** *Gouda Cheese*

Ripened semi hard cheese obtained by coagulating milk with cultures of harmless lactic acid producing bacteria, suitable enzymes of nonanimal origin or other suitable coagulating enzymes. It shall have firm texture suitable for cutting, straw to yellowish colour which may have a hard rind coated with food grade waxes, wrapping of cloth, or vegetable oil.

**3.4.5** *Havarti Cheese*

Ripened semi hard cheese obtained by coagulating milk with cultures of harmless lactic acid producing bacteria, suitable enzymes of nonanimal origin or other suitable coagulating enzymes. It shall have firm texture suitable for cutting, a light yellow colour and may have a semi soft slightly greasy rind.

**3.4.6** *Tilsiter*

Ripened semi hard cheese obtained by coagulating milk with cultures of harmless lactic acid producing bacteria and cultures of Bacterium linens, suitable enzymes of non-animal origin or other suitable coagulating enzymes. It shall have firm texture suitable for cutting, with an ivory to yellow colour with a firm rind which may show red and yellow smear producing bacteria or coated with food grade waxes or wrapping of cloth or polyfilm after removal of the smear.

**3.4.7** *Cottage Cheese*

Soft unripened cheese obtained by coagulation of pasteurized skimmed milk with cultures of harmless lactic acid bacteria with or without the addition of suitable enzymes of non-animal origin or other suitable coagulating enzymes. Creamed Cottage Cheese is cottage cheese to which a pasteurized creaming mixture of cream, skimmed milk, condensed milk, non-fat dry milk, dry milk protein, Sodium or Potassium or Calcium or Ammonium caseinate is added. It shall have a soft texture with a natural white colour. It may contain spices, condiments, seasonings and fruits pulp.

**3.4.8** *Cream Cheese* (*Rahmfrischkase*)

Soft, unripened cheese obtained by coagulation of pasteurised milk and pasteurised cream with cultures of harmless lactic acid producing bacteria with or without the addition of suitable enzymes of non-animal origin or other suitable coagulating enzymes. It shall have a soft smooth texture with a white to light cream colour. It may contain spices, condiments, seasonings and fruit pulp.

**3.4.9** *Coulommiers Cheese*

Soft unripened cheese obtained by coagulation of milk with cultures of harmless lactic acid producing bacteria and suitable enzymes of non-animal origin or other suitable coagulating enzymes and moulds characteristic of the variety. It shall have soft texture and white to cream yellow colour and may show presence of white mould including orange or red spots on the surface.

**3.4.10** *Camembert Cheese*

Ripened soft cheese obtained by coagulating milk of with cultures of harmless lactic acid producing bacteria and cultures of *Penicillium caseicolum* and *Bacterium linens*, suitable enzymes of non-animal origin or other suitable coagulating enzymes. It may be in the form of flat cylindrical shaped cheese covered with white mould (*Penicillium caseicolum*) with occasional orange coloured spots (*Bacterium linens*).

**3.4.11** *Brie Cheese*

Soft ripened cheese obtained by coagulating milk with cultures of harmless lactic acid producing bacteria and cultures of *Penicillium caseicolum* and *Bacterium linens*, suitable enzymes of non-animal origin and other suitable coagulating enzymes. It shall be white to creamy yellow in colour with a smooth texture showing presence of white mould (*Penicillium caseicolum*) with occasional orange coloured spots (*Bacterium linens*) on the rind.

**3.4.12** *Saint Paulin*

Ripened semi hard cheese obtained by coagulating milk with suitable enzymes of non-animal origin, cultures of harmless lactic acid producing bacteria or other suitable coagulating enzymes. It shall be white to yellow in colour with a firm and flexible texture and a hard rind which may be coated with food grade waxes or polyfilm.

**3.4.13** *Samsoe*

Hard ripened cheese obtained by coagulating milk with suitable enzymes of non-animal origin and cultures of harmless lactic acid producing bacteria or suitable coagulating enzymes. It shall be yellow in colour with a firm texture suitable for cutting and may have a rind with or without food grade waxes or polyfilm coating.

**3.4.14** *Emmental or Emmentale*

Hard ripened cheese with round holes obtained by coagulating milk with suitable enzymes of non-animal origin, cultures of harmless lactic acid producing bacteria or other suitable coagulating enzymes. It shall have a light yellow colour and a firm texture suitable for cutting and may have a hard rind.

**3.4.15** *Provolone*

Pasta filata cheese obtained by coagulating milk with cultures of harmless lactic acid producing bacteria, suitable enzymes of non-animal origin or other suitable coagulating enzymes. It may be smoked. It shall be white to yellow straw in colour with a fibrous or smooth body and rind which may be covered with vegetable fat or oil, food grade waxes or polyfilm.

**3.4.16** *Extra Hard Grating Cheese*

Ripened cheese obtained by coagulating milk with cultures of harmless lactic acid producing bacteria, non-animal rennet, or other suitable coagulating enzymes. It may have slightly brittle texture and an extra hard rind which may be coated with vegetable oil, food grade waxes or polyfilm.

**3.4.17** *Mozzarella Cheese*

Unripened cheese obtained by coagulating milk with cultures of harmless lactic acid producing bacteria, suitable enzymes of nonanimal origin or by direct acidification. It is a smooth elastic cheese with a long stranded parallel-orientated fibrous protein structure without evidence of curd granules. The cheese is rindless and may be formed into various shapes.

a) Mozzarella with a high moisture content is a soft cheese with overlying layers that may form pockets containing liquid of milky appearance. The cheese has a near white colour.

b) Mozzarella with low moisture content is a firm or semi-hard homogeneous cheese without holes and is suitable for shredding. Mozzarella is made by ‘pasta filata’ processing, which consists of heating curd of a suitable *p*H value kneading and stretching until the curd is smooth and free from lumps. Still warm, the curd is cut and moulded, then firmed by cooling.

**3.5 Cheese Products**

The products prepared from cheese(s) with other milk products and may contain permitted non-dairy ingredients.

**3.5.1 Processed Cheese**

The food prepared by comminuting and mixing into a homogeneous plastic mass with the aid of heat one or more types of cheeses with or without the ingredients mentioned in **4.2** to **4.3**. Non-dairy

ingredients contained in the product should not exceed one sixth of the weight of the total solids of the final product.

**3.5.2 Processed Cheese Spread**

The product is similar to that in **3.5.1** except that this product has more spreadable characteristics and has more moisture content. Non-dairy ingredients contained in the product should not exceed one sixth of the weight of the total solids of the final product.

**3.6 Whey Cheese**

A solid or semi-solid product obtained from whey with or without the addition of milk, cream or other materials of milk origin and molding of the concentrated product which includes the whole cheese and the rind of the cheese and it is different from whey protein cheese.

**3.7 Cheeses in Brine**

Semi-hard to soft ripened cheeses. The body has a white to yellowish colour and a compact texture suitable for slicing, with none to few mechanical openings. The cheeses have no actual rind and have been ripened and preserved in brine until delivered to, or prepacked for, the consumer. Certain individual cheeses in brine contain specific herbs and spices as part of their identity.

## 4 RAW MATERIALS

**4.1** The following are the essential raw materials for the manufacture of cheese.

**4.1.1** *Milk*

The milk may be standardized as required to enable the end product to comply with the composition, body and texture of the cheese. Standardization may be done by either fresh skimmed milk or fresh cream or skimmed milk obtained from reconstituted milk powder. Unless heated to a higher temperature before use, milk, skimmed milk and cream shall be pasteurized by holding it at a temperature of not less than 63 to 65.6°C for a period of not less than 30 minutes, or for a time and a temperature equivalent thereto needed for alkaline phosphatase destruction.

**4.1.2** *Milk Products*

Butter, cream, butter oil, milk, skim milk, milk powder cheese whey, sweet butter milk, or one or more of these or any of the foregoing from which part of water has been removed.

**4.1.3** Starter cultures of harmless lactic acid, and flavour producing bacteria and cultures of other harmless microorganisms

**4.2 Optional Ingredients**

The product may contain the following optional ingredients:

a) Safe and suitable enzymes (non-animal origin);

b) Iodized salt (conforming to IS 7224);

c) Potable water (conforming to IS 10500);

d) Non-dairy ingredients: Vinegar or acetic acid, spices, condiments and other vegetable seasoning and foods, other than sugars, properly cooked or prepared for flavouring and characterization of the product *(in cheese products only)*; and

e) Natural carbohydrate sweetening agents: Sucrose, dextrose, corn syrup, corn syrup solids, honey, maltose, malt syrup and hydrolysed lactose *(in processed cheese spreads only).*

NOTE — All ingredients used shall be clean and in every way fit for human consumption.

**4.3 Food Additives**

**4.3.1** *Emulsifying Agents*

One or more of the sodium or potassium salts of citric acid, phosphoric acid, tartaric acid, lactic acid, may be added in such quantities that the mass of the solids of such emulsifying agents is not more than 4 percent of the mass of the finished product.

**4.3.2** *Acidifying Agents*

Agents, such as lactic acid, citric acid, acetic acid, malic acid, glucono delta lactone, and sour whey and phosphoric acid may be added in such quantity that the *p*H of the pasteurized cheese spread is not below 4.0.

**4.3.3** The product may also contain other permitted food additives within the limits as specified under the *Food Safety and Standards (Food Products Standards and Food Additives) Regulations*, 2011.

## 5 REQUIREMENTS

**5.1 Preparation and Processing**

**5.1.1** *Hygienic Requirements*

The product shall be processed and packed in a facility maintained under hygiene condition (*see* IS 2491). It shall be also stored and distributed under hygienic conditions.

**5.1.2** *Hard Variety Cheese* — Milk which shall be pasteurized or adequately heated shall be subjected to the action of harmless lactic acid producing bacteria with or without the addition of other harmless flavour-producing bacteria present in such milk. Annatto or carotene may be added. Milk coagulating enzymes (non-animal origin) with or without purified calcium chloride (as anhydrous salt) and sodium citrate in a quantity not exceeding 0.02 percent of the mass of the milk shall be added to set the milk to a semi-solid mass. The mass shall then be cut into small pieces, stirred and heated. The curd shall be separated from the whey by draining and shall be made into forms and pressed. The curd shall be salted at some stage of the manufacturing process. Ripened cheese shall be held for some time at such temperature and under such other conditions as will result in necessary biochemical and physical changes characterizing the cheese in question. Mold ripened cheese shall be accomplished primarily by the development of characteristic mold growth through the interior and/or on the surface of the cheese. The rind may be coated with food grade waxes or polyfilm.

**5.1.3** *Processed Cheese*

During its preparation, the processed cheese should be heated for not less than 30 seconds at a temperature of not less than 66 °C.

**5.2 Description**

**5.2.1** *Appearance*

Cheese shall be clean and sound, free from dirt, and insect and rodent contamination.

**5.2.2** *Odour and Flavour*

Cheese shall have a pleasant odour and characteristic flavour.

**5.2.3** *Texture and Consistency*

Cheese shall be of good texture and uniform consistency.

**5.3** The product shall also comply with the requirements specified in Table 1.

**Table 1 Requirements for Cheese**
(*Clauses* 3 *and* 5.3)

| **Sl No.** | **Product** | **Moisture, percent by mass, *Max*** | **Milk Fat, percent (on dry basis), *Min*** | **Lactose, percent by mass, *Max*** |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| i) | Cheese | | | |
| a) | Hard Pressed Cheese | 39.0 | 48.0 | — |
| b) | Semi Hard Cheese | 45.0 | 40.0 | — |
| c) | Semi Soft Cheese | 52.0 | 45.0 | — |
| d) | Soft Cheese | 80.0 | 20.0 | — |
| e) | Extra Hard Cheese | 36.0 | 32.0 | — |
| ii) | Individual or Named Variety cheeses | | | — |
| a) | Cheddar | 39.0 | 48.0 | — |
| b) | Danbo | 39.0 | 45.0 | — |
| c) | Edam | 46.0 | 40.0 | — |
| d) | Gouda | 43.0 | 48.0 | — |
| e) | Harvati | | | |
| | Havarti | 48.0 | 45.0 | — |
| | 30 percent Harvati | 53.0 | 30.0 | — |
| | 60 percent Harvati | 60.0 | 60.0 | — |

**Table 1** (*Continued*)

| Sl No. | Product | Moisture, percent by mass, *Max* | Milk Fat, percent (on dry basis), *Min* | Lactose, percent by mass, *Max* |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| f) | Tilsiter | | | |
| | Tilsiter | 47.0 | 45.0 | |
| | 30 percent Tilsiter | 53.0 | 30.0 | — |
| | 60 percent Tilsiter | 39.0 | 60.0 | — |
| g) | Cottage Cheese and Creamed Cottage Cheese | 80.0 | *Min*. 4 percent (*m/m*) for creamed cottage cheese | — |
| h) | Cream Cheese | 55.0 | 70.0 | — |
| j) | Coulommiers | 56.0 | 46.0 | — |
| k) | Camembert | | | |
| | Camembert 30 percent | 62.0 | 30.0 | — |
| | Camembert 40 percent | 59.0 | 40.0 | — |
| | Camembert 45 percent | 57.0 | 45.0 | — |
| | Camembert 55 percent | 52.0 | 55.0 | — |
| m) | Brie | 56.0 | 40.0 | — |
| n) | Saint Paulin | 56.0 | 40.0 | — |
| p) | Samsoe | | | |
| | Samsoe | 44.0 | 45.0 | — |
| | 30 percent Samsoe | 50.0 | 30.0 | — |
| q) | Emmentaler | 40.0 | 45.0 | — |
| r) | Provolone | | | |
| | Provolone Smoked | 45.0 | 45.0 | — |
| | Provolone Unsmoked | 47.0 | 45.0 | — |
| s) | Extra Hard Grating Cheese | 36.0 | 32.0 | — |
| t) | Mozzarella Cheese | 60.0 | 35.0 | — |
| u) | Pizza Cheese | 54.0 | 35.0 | — |
| iii) | Cheese products | | | |
| a) | Processed Cheese | 47.0 (50 percent for chiplets, packed sliced processed cheese), when sold in a package other than tin | 40.0 | 5.0 |
| b) | Processed Cheese Spread | 60.0 | 40.0 | 5.0 |
| iv) | Whey cheeses | | | |
| a) | Creamed whey cheese | — | 33.0 | — |

*Table 1* (*Concluded*)

| Sl No. | Product | Moisture, percent by mass, *Max* | Milk Fat, percent (on dry basis), *Min* | Lactose, percent by mass, *Max* |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| b) | Whey cheese | — | *Min*. 10 and *Max*. 33 | — |
| c) | Skimmed whey cheese | — | *Max*. 10 | — |
| v) | Cheeses in brine | | | |
| a) | Soft cheese in brine | — | 40 | — |
| b) | Semi-hard cheese in brine | — | 40 | — |

NOTES
**1** Moisture shall be determined by method given in Annex B.
**2** For routine purpose, the method prescribed in IS 9070 may be used for determination of milk fat, however, the method prescribed in IS 12758 shall be used for reference purpose.
**3** Lactose shall be determined by the method given in IS 11963.

**5.4** Cheese shall comply with the microbiological requirements specified in Table 2.

**Table 2 Microbiological Requirements for Cheese**
**(***Clause* 5.4**)**

| Sl No. | Characteristic | Requirement | | | | Method of test, Ref to |
|---|---|---|---|---|---|---|
| | | Sampling Plan [1)] | | Limit (cfu) | | |
| | | *n* | *c* | *m* | *M* | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| i) | Coliform count | 5 | 3 | $1 \times 10^2$ /g | $5 \times 10^2$ /g | IS 5401 (Part 1) |
| ii) | *Staphylococcus aureus* (Coagulase positive) | 5 | 3 | 10 /g | $1 \times 10^2$ /g | IS 5887 (Part 8/ Sec 1* or Sec 2) |
| iii) | Yeast and mold count | 5 | 3 | $1 \times 10^2$ /g | $5 \times 10^2$ /g | IS 5403 or IS 16069-1* or IS 16069-2* |
| iv) | *Escherichia coli* | 5 | 0 | < 10 /g | — | IS 5887 (Part 1) |
| v) | *Salmonella sp*. | 5 | 0 | Absent/25 g | — | IS 5887 (Part 3/ Sec 1) |
| vi) | *Listeria monocytogenes* | 5 | 0 | Absent/25 g | — | IS 14988 (Part 1) |

NOTES
**1** For sampling plan, *see* Annex C.
**2** In case of dispute, the method indicated by '*' shall be the referee method.

**5.5** Processed cheese and cheese spread shall comply with the microbiological requirements specified in Table 3.

**Table 3 Microbiological Requirements for Processed Cheese and Cheese Spread**
(*Clause 5.5*)

| Sl No. | Characteristic | Requirement | | | | Method of test, Ref to |
|---|---|---|---|---|---|---|
| | | Sampling Plan | | Limit (cfu) | | |
| | | *n* | *c* | *m* | *M* | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| i) | Aerobic colony count | 5 | 2 | $2.5 \times 10^4$/g | $5 \times 10^4$ /g | IS 5402 (Part 2) |
| ii) | Coliform count | 5 | 0 | <10/g | — | IS 5401 (Part 1) |
| iii) | *Staphylococcus aureus* (Coagulase positive) | 5 | 0 | <10/g | — | IS 5887 (Part 8/ Sec 1* or Sec 2) |
| iv) | *Escherichia coli* | 5 | 0 | Absent/g | — | IS 5887 (Part 1) |
| v) | *Salmonella sp*. | 5 | 0 | Absent/25 g | — | IS 5887 (Part 3/ Sec 1) |
| vi) | *Listeria monocytogenes* | 5 | 0 | Absent/25 g | — | IS 14988 (Part 1) |

NOTES
**1** For sampling plan, *see* Annex C.
**2** In case of dispute, the method indicated by '*' shall be the referee method.

## 6 PACKING AND MARKING

### 6.1 Packing

All the material used for wrapping or packaging the cheese shall be of such a nature as to impart no off-flavour or odour, nor in any other way contaminate the product packed under normal conditions of manufacture, storage and use.

**6.1.1** The metal cans when used for packing cheese shall be open top type with a soldered side-seam and compound-lined, double-seamed end. The inside of the can shall be coated with a suitable food-grade lacquer finish.

### 6.2 Marking

**6.2.1** The following information shall be marked legibly and indelibly on each container:

a) Name of the material also mentioning type of cheese and brand name if any;
b) List of the ingredients in the descending order;
c) Name and address of the manufacturer;
d) Batch or code number;
e) Month and year of manufacturing or packing;
f) Net quantity;
g) Direction for storage;
h) Expiry/use by (date, month and year)
j) Any other requirements under the *Food Safety and Standards (Labelling and Display) Regulations*, 2020 and the *Legal Metrology Act*, 2009 and Rules framed thereunder.

**6.2.2** *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

## 7 SAMPLING

Representative samples of the product shall be drawn and tested for conformity to this standard as prescribed in IS 11546.

## ANNEX A
(*Clause* 2)

## LIST OF REFERRED STANDARDS

:

| *IS No.* | *Title* |
|---|---|
| IS 1479 (Part 2) : 1961 | Methods of test for dairy industry: Part 2 Chemical analysis of milk |
| IS 2491 : 2013 | Food hygiene — General principles — Code of practice (*third revision*) |
| IS 5401 (Part 1) : 2012/ ISO 4832 : 2006 | Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of coliforms: Part 1 Colony count technique (*second revision*) |
| IS 5402 (Part 2) : 2021/ISO 4833-2 : 2013 | Microbiology of the food chain — Horizontal method for the :enumeration of microorganisms: Part 2 Colony count at 30°C by the surface plating technique (*third revision*) |
| IS 5403 : 1999 | Method for yeast and mold count of foodstuffs and animal feeds (*first revision*) |
| IS 5887 | Methods for detection of bacteria responsible for food poisoning |
| (Part 1) : 1976 | Isolation, identification and enumeration of *Escherichia coli* (*first revision*) |
| (Part 3/Sec 1) : 2020/ ISO 6579-1 : 2017 | Horizontal method for the detection, enumeration and serotyping of *Salmonella*, Section 1 Detection of *Salmonella* spp. (*third revision*) |
| (Part 8/ Sec 1) 2002/ ISO 6888-1 : 1999 | Horizontal method for enumeration of coagulase-positive Staphylococci (*Staphylococcus aureus* and other species), Section 1 Technique using Baird-Parker agar medium |
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| IS 10500 : 2012 | Drinking water — Specification (*second revision*) |
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| IS 12758 : 2005/ISO 1735 : 2004 | Cheese and processed cheese products — Determination of fat content — Gravimetric method (Reference method) (*first revision*) |
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| IS 16069 | Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds |
| (Part 1) : 2013/ISO 21527-1 : 2008 | Colony count technique in products with water activity greater than 0.95 |
| (Part 2) : 2013/ISO 21527-2 : 2008 | Colony count technique in products with water activity less than or equal to 0.95 |

## ANNEX B
(*Table* 1, *Col* 3)

## DETERMINATION OF MOISTURE

### B-1 APPARATUS

**B-1.1 Flat-Bottomed Dishes** — of nickel or other suitable metal not affected by boiling water, 7 to 8 cm in diameter and not more than 2.5 cm deep, provided with short glass stirring rods having a widened flat end.

**B-1.2 Sand** — Which passes through 500 micron IS Sieve and is retained by 180 micron IS Sieve. It shall be prepared by digestion with concentrated hydrochloric acid, followed by thorough washing with water. It shall then be dried and ignited till it is dull red.

**B-1.3 Well-Ventilated Oven** — Capable of operating at 102 ± 1°C air temperature.

### B-2 PROCEDURE

**B-2.1** Heat the necessary number of metal dishes, each dish containing about 20 g of prepared sand and a stirring rod, in the oven for about one hour. Allow to cool in an efficient desiccator for 30 minutes to 40 minutes. Weigh accurately about 3 g of the prepared sample of cheese into a dish. Saturate the sand by the careful addition of a few drops of distilled water, and thoroughly mix the wet sand with the cheese by stirring with the glass rod, smoothing out lumps and spreading, the mixture over the bottom of the dish.

**B-2.1.1** Place the dish on a boiling water-bath for 20 to 30 minutes, then wipe the bottom of the dish and transfer it, with the glass rod, to the well-ventilated oven at 102 °C ± 1 °C for 4 hours.

The bulb of the oven control thermometer shall be immediately above the shelf carrying the dish. Dishes shall not be placed near the walls of the oven, and should be insulated from the shelf by suitable silica or glass supports.

**B-2.1.2** After four hours, remove the dish to an efficient desiccator, allow to cool as before, and weigh. Replace the dish in the oven for a further period of one hour at 102 °C ± l °C, remove to the desiccator, and cool and weigh again. Repeat the process of heating, cooling and weighing every one hour till consecutive weighings agree to within 0.5 mg.

### B-3 CALCULATION

From the loss in mass observed, calculate the percentage by mass of moisture.

$$\text{Moisture, percent by mass} = \frac{M_1 - M_2}{M_1 - M} \times 100$$

where

$M$ = Mass in g, of the empty dish with sand and containing glass rod;

$M_1$ = Initial mass in g of the dish, sand, glass rod along with the sample taken for analysis before adding distilled water;

$M_2$ = The final mass in g of the dish, sand, glass rod along with the sample after drying.

Express the results to the nearest 0.01 percent (*m/m*).

## ANNEX C
(*Table* 2 *and* 3)

## SAMPLING PLAN FOR MICROBIOLOGICAL REQUIREMENTS

### C-1 SAMPLING PLAN FOR MICROBIOLOGICAL REQUIREMENTS

The terms *n*, *c*, *m* and *M* used in this standard have the following meaning:

*n* = Number of units comprising a sample.

*c* = Maximum allowable number of units having microbiological counts above *m* for 2-class sampling plan and between *m* and *M* for 3-class sampling plan.

*m* = Microbiological limit that separates unsatisfactory from satisfactory in a 2-class sampling plan or acceptable from satisfactory in a 3-class sampling plan.

*M* = Microbiological limit that separates unsatisfactory from satisfactory in a 3-class sampling plan.

### C-2 INTERPRETATION OF RESULTS

| *2-Class Sampling Plan (where n, c and m are specified)* | *3-Class Sampling Plan (where n, c, m and M are specified)* |
|---|---|
| 1. Satisfactory, if all the values observed are < m | 1. Satisfactory, if all the values observed are $\leq m$ |
| 2. Unsatisfactory, if one or more of the values observed are > m or more than c values are > *m* | 2. Acceptable, if a maximum of *c* values are between *m* and *M* and the rest of the values are observed as $\leq m$ |
| | 3. Unsatisfactory, if one or more of the values observed are > *M* or more than *c* values are > *m* |

**ANNEX D**
(*Foreword*)

**COMMITTEE COMPOSITION**

Dairy Products and Equipment Sectional Committee, FAD 19

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